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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/013,089 | 12/07/2001 | Jeng-Yang Pan | 67,200-627 | 1424 |

7590 06/20/2003

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| EXAMINER |
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DOLAN, JENNIFER M

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| ART UNIT | PAPER NUMBER |
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2813

DATE MAILED: 06/20/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/013,089

Applicant(s)

PAN ET AL.

Examiner

Jennifer M. Dolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-17, in Paper No. 3 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Accordingly, claims 18-20 are withdrawn from further consideration as being drawn to a nonelected invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, 9, 11, and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Publication No. 2003/0029570 to Kawamura et al.

Regarding claims 1 and 3, Kawamura discloses a housing (wafer boat (1), reactor assembly, and tube; paragraph 0095) to receive a semiconductor wafer tray (6) comprising: at least 4 positioning kits (portion of 2 surrounding each groove; figure 21), each kit comprising: a primary outside edge (outer vertical wall of groove (3)) at least substantially corresponding and affixed to an interior sidewall of the housing (outer vertical edge of groove affixed to support member 2); an inside edge (radially innermost portions of 2, adjoining with the groove) opposite

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the primary outside edge and having a groove (3) at least substantially corresponding to a part of a frame of the semiconductor wafer tray (figures 21 and 22), the groove receptive to the part of the frame of the semiconductor wafer tray to assist in maintaining the tray in a stable position when the wafer tray is completely positioned within the housing (figure 21).

Regarding claim 14, Kawamura discloses a rapid thermal processing assembly (paragraph 0096) comprising a reactor block (heat treatment furnace; paragraph 0095) with a slot therein (paragraph 0095; since a tube is disposed in the furnace, the furnace must have a slot for receiving the tube), a heat treatment tube disposed in the reactor block (paragraph 0095); a wafer tray (6) slidable into and out of the tube (paragraph 0095), and at least 4 positioning kits (portion of 2 surrounding each groove) inside each tube (paragraph 0095; wafer boat (1) is inside of tube), each kit having a groove at least substantially corresponding to a part of the wafer tray and receptive to the part of the wafer tray when the tray is slid into the tube to assist in maintaining the tray in a stable position within the tube during the RTP (figure 21).

Regarding claim 2, Kawamura discloses that each kit has an upper outside edge (portion upon which wafer tray (6) rests) facing an interior upper wall of the housing (4; figures 21 and 22) and a lower outside edge (portion of groove opposite the upper outside edge portion) facing an interior lower wall of the housing (5; figures 21 and 22)

Regarding claims 4 and 15, Kawamura discloses that the groove is shaped to mirror the part of the frame of the wafer tray to which the groove corresponds, such that the frame fits snugly inside the groove (figure 21 and paragraph 0094).

Regarding claim 5, Kawamura discloses that the groove is rectangular (figure 21).

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Regarding claim 6, Kawamura discloses that the kits are C-shaped (portions of 2 surrounding each groove are C-shaped; figures 21 and 22).

Regarding claims 7, 9, 11, and 16, Kawamura discloses kits on the back, right, and left sides of the housing (figure 21).

Regarding claims 13 and 17, Kawamura discloses that the housing comprises a tube for rapid thermal anneal (paragraphs 0095- 0096). It is implicit that the tube is made of quartz, since quartz tubes are very commonly used in an RTA apparatus, and are one of the few materials suitable for withstanding high RTA temperatures without deformation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al. in view of U.S. Patent No. 6,472,294 to Meuris et al.

Regarding claims 8, 10, and 12, Kawamura discloses 4 positioning kits, with two kits positioned at the right and lefthand sides of the "back" of the housing, and two kits positioned at the right and lefthand sides near the opening of the housing where the semiconductor wafer tray is inserted (figure 21).

Kawamura, however, discloses a circular tray shape, and thus fails to disclose that any of the kits are near any corners.

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Meuris discloses that a substrate holder for thermal processing may equivalently be circular or square shaped (column 9, lines 57-67; figure 9a).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that the wafer holder of Kawamura is square shaped, as taught by Meuris, and hence that the positioning kits are near 'corners'. The rationale is as follows: One of ordinary skill in the art at the time the invention was made would have been motivated to use square shaped holders, because Kawamura shows that circular and square shaped holders are recognized art equivalents in the art of thermal annealing, and thus may be used interchangeably (see Meuris, column 9, lines 57-67).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent Publication No. 2003/0019585 to Tometsuka discloses an RTA apparatus with wafer holders snugly fitting into positioning kit grooves, but does not qualify as prior art.

b. U.S. Patent No. 6,062,853 to Shimazu et al., U.S. Patent No. 6,344,387 to Hasebe et al., and 5,020,476 to Bay et al. disclose various wafer boats using grooved positioning kits.

c. U.S. Patent No. 6,310,328 to Gat discloses an RTA chamber using single platform positioning kits for wafers.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (703) 305-3233. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jennifer M. Dolan
Examiner
Art Unit 2813

jmd
June 11, 2003


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800